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portions of the nebula 2 to 5 seconds of arc from the nucleus are such as to indicate a rapid decrease in the speed of rotation as we go out from the central mass. This phenomenon, to which we have previously referred in the case of N. G. C. 7009, we interpret to mean that the outer strata of the nebula lag behind.

A spectrogram taken with the slit in position angle 90° (east and west), that is, along the minor axis, shows no appreciable inclination or curvature of the nebular lines. We, therefore, do not confirm Hartmann's[1] observation of a difference of velocity of the order of 6 kilometers per second between the west edge and center of the nebula.

W. W. Campbell.
J. H. Moore.

May, 1916.

The Orbit of β 80.

The binary system β 80 (R. A. = 23^h 13^m 46^s; Decl. = + 4° 52′; Mags. = 8.3—9.3) was discovered by Burnham in 1875 with his six-inch refractor. The system soon gave promise of being of more than usual interest because in addition to a large proper motion (0.″48 towards 105°) the measures showed rapid orbital motion.

At the time of discovery the angular separation between the components exceeded 1″.0, but it rapidly diminished until it fell to a minimum of 0″.15 in 1904-05. Since then it has increased, and is now about 0″.7. The angular motion since discovery forty years ago has exceeded 300° and the star has been well observed.

Nevertheless it is not possible even now to compute an orbit which may be regarded as reliable, because it is quite uncertain what the maximum apparent separation of the two components will be. See published an orbit (period 63.5 years) in 1906 which satisfied the observations to that date, but in the past ten years the observed and computed paths have diverged, and the residual in angle (O-C) now exceeds 21°.

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[1] *Ap. Journ.*, **15**, 287, 1902.

I have recently made a new investigation of the data and have found that orbits with periods of 95 years and of 156 years will satisfy the observed position angles with equal accuracy. The shorter period, however, gives a rather better representation of the observed distances. It is also in favor of the shorter period that Struve failed to detect the pair. For 1831, the shorter period orbit gives a computed angular separation of only 0″.8, while the larger orbit gives 1″.75. Measures for another ten or twenty years are needed before a really satisfactory orbit can be computed. The two sets of elements which I have derived are as follows:

ELEMENTS.

	I	II
P	95.2 years	156.0 years
T	1905.0	1904.90
e	0.77	0.84
a	0″.72	0″.955
ι	±22°.95	0°.0
ω	98.0	
Ω	6.2	102.3 (position angle of periastron)

According to Kapteyn and Weersma, the absolute parallax of the system is +0″.021. Assuming the correctness of this value and of elements I, the mass is 4.45 times the Sun's mass, the semi-major axis of the orbit 34 astronomical units, and the absolute magnitudes of the two components 4.9 and 5.9 respectively.

R. G. Aitken.

May, 1916.

Note on the Nebula N. G. C. 6610.

In comparing photographs of Selected Area No. 86 made for the determination of standard magnitudes it was noted that an object, apparently a planetary nebula, shown on a plate of an hour's exposure on August 27, 1911, does not appear on any of the other plates. The N. G. C. gives no record of any nebula in the position of the suspected planetary. The catalog declination of N. G. C. 6610 is, however, the same as that of the object, but the recorded right ascension is 11^s greater. On the other hand, none of the photographs shows